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A TABLE OF THE GENERA OF NOCTUIDÆ OF NORTHEASTERN NORTH AMERICA.

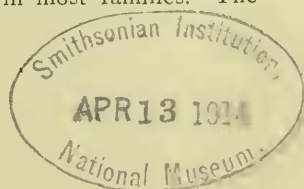
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As the last general view of our Noctuid genera, published by J. B. Smith in the Bulletin of the Brooklyn Entomological Society, is now obsolete, a new synopsis of them, even for a limited fauna, will prove useful.

The Noctuidæ may be defined as moths with simple or pectinate antennæ, with regularly tapering shaft, with labial palpi developed and maxillary palpi, in our species, rudimentary. Ocelli always present, and rarely covered with scales. Fore wing with one developed anal vein, with cubitus apparently four-branched, R_3 and R_4 never arising separately from the cell. Hind wing with two developed anals, with a strong frenulum, simple in the male, usually of three bristles in the female. Sc and R arising separately at the base, the base of Sc curved and moderately thickened, not sending a brace across to the base of the frenulum; the two veins more or less completely fused for a short distance, the fusion commencing less than a fifth way out on the cell and very rarely extending beyond the middle.

The characters used in dividing the genera are drawn from all parts, but the venation is of less value than in most families. The



size and vestiture of the palpi is much used but they are movable and caution must therefore be used. The basal joint varies a little in size but gives no good characters. The second may be either straight or upturned, in the latter case it is concave on the upper side, enabling the character to be used, even in dead specimens where the palpus has fallen forward. The third joint varies in size and vestiture, but its position is generally unimportant. Where statements are given of the relation of it to the vertex it is understood as applying in the position taken in life, with the second joint closely applied to the frontal vestiture, and the third erect or recurved.

The maxillary palpi can only be seen when the labial palpi are removed; in the Acronyctinæ and many Quadrifidæ they are easily seen from in front; in the Noctuinæ they are smaller, and covered by the pilifer, or rudimentary mandible, and its bristles; they are attached to the sides of the base of the tongue.

The tongue is considered as rudimentary when shorter than the thorax. Such tongues are also weak and slender, and may be recognized with a little practice without uncoiling.

The vestiture is the covering of hair and scales, and the characters here used are drawn from the top of the thorax. It is of five principal types: (1) scales, broad to the base, then narrowing abruptly to the knob that fits in a socket in the skin; (2) spatulate scales, and short spatulate hairs, formed of a broad end, attached by a hair-like base some three or four times its length, or in most cases many times its length. In these cases the scale-like tips may be imbricated and give the appearance of simple scales; (3) flattened hairs, in which the broadened part is many times as long as wide; and (4) simple hair, which is not flattened at all, but occasionally ends in a minute blunt or bifid tip. Besides these main types *Eriopus* shows a very long scale, which tapers gradually to the base, and many Pachnobidæ have deeply forked bifid or trifid hairs that seem simple until pulled out.

The legs almost always show a fringe of hair on the femora, easily rubbed off in most of the slender species, and the tibiæ also are roughly hairy in the stout kinds, but this is not considered in these tables unless forming a mass larger than the tibia itself or capable of fanlike expansion.

The tufting of the body is much used. The noticeable hair arises

from the following parts: the collar or tegulæ, a pair of loose pieces forming the front quarter of the dorsum of the thorax; the patagia or patagiæ lying over the base of the wings, and curving down in front of them; the mesothorax or disc of the thorax lying between them, and the metathorax or narrow posterior ridge, extending out under the tips of the patagia to the base of the hind wings. The principle tufts usually on the front and back of the mesothorax the last sometimes combining with a mass of hair on the metathorax.

The abdomen has a series of tufts on the middle line in many cases, the first of which is usually larger than the second.

The tympanic opening lies at each side of the first segment of the abdomen, behind the base of the hind wings, sometimes it is covered by a flap of scales. There is usually a slit, often concealing a pencil of hair, just above it.

It should be noted that all the Noctuidæ have spines on the under side of the tarsi, the outer and inner of these form a regular row on each side, while those in the middle line are irregular and vary individually. In many Agrotids there is a fourth row toward the upper outer side of the tarsus usually of only four or five spines. *Catabapta* also has this fourth row.

I should be very grateful for additions and corrections to this table, and especially for information as to any characters that can be used to separate the genera related to *Hadena*, *Mamestra*, *Xylina*, and the female Deltoids.

- | | |
|--|----------------------|
| 1. Eyes hairy | 2. |
| Eyes naked (without hair arising from the eyeball) | 28. |
| 2. Venation of hind wing quadrid (1) | 3. |
| Trifid | 5. |
| 3. Palpi reaching to middle of front or rather beyond; tuft on basal joint of antenna scaly | <i>Charadra</i> (2). |
| Palpi very short and hairy, the second joint shorter than width of eye, tuft on antenna hairy | 4. |
| 4. Female antennæ simple, fore wing with decided W-mark in subterminal line, orbicular a dot or absent | <i>Panthea</i> (2). |
| Female antennæ serrate below, fore wing with st. line only a little irregular, orbicular a ring | <i>Demas</i> (2). |
| 5. Fore tibia with a strong claw at the tip, very short | <i>Barathra</i> . |
| Fore tibia normal, unarmed | 6. |
| 6. Eyes about half the width of the front, and oval | <i>Anarta</i> (3). |
| Eyes about as wide as the front | 7. |

7. Hair on the thorax all erect, bristling, and with spoon-shaped tips,
Xanthopastis (4).
Vestiture rarely erect and bristling, and if so with the tips not enlarged 8.
8. With a high conical tuft on vertex, eyes lashed *Stretchia*.
No conical tuft between antennæ 9
9. Eyes strongly lashed in front as well as behind 10.
Eyes not lashed in front, and weakly if at all behind 11.
10. Vestiture loose, hairy *Lasiestra* (5).
Vestiture normal, mixed *Xylomiges*.
11. Thorax with fine hairy vestiture, and abdomen with strong normal tufting *Nephelodes*.
With coarser vestiture or nearly untufted abdomen 12.
12. Female antennæ pectinate (wings usually less than twice as long as wide, thorax with a pyramidal crest in front, often with contrasting white reniform *Tricholita*.
Female, and often male, antennæ simple; wings usually more than twice as long as wide, thorax rarely with pyramidal crest; rarely with a contrasting white mark in reniform 13.
13. Abdomen with several dorsal tufts 14.
Abdomen with a single basal tuft or none 15.
14. Fore wing with R_3 and R_4 stalked more than halfway from tip of accessory cell to apex, with strongly oblique outer margin *Morrisonia* (6).
Fore wing with R_3 and R_4 shortly stalked, with more erect outer margin, *Mamestra* (7).
15. Vestiture of simple hair, no tufts whatever .. *Leucania* (typical) (8) (9).
Vestiture of narrow strap-shaped flattened hair; mostly rather slender species, longitudinally striate *Leucania* group *Borolia* (8).
Vestiture mixed, of various widths of serrate flattened hair, or if almost entirely of hair with distinct basal abdominal tuft 16.
16. Front rough and projecting half the width of the eyes or with heavy spines on outer side of first joint (metatarsus) of fore tarsus, *Mamestra* (7).
Front smooth, not projecting more than a third the width of the eyes, spining of fore tarsus normal 17.
17. Abdomen with a more or less distinct basal tuft 18.
Abdomen wholly untufted 22.
18. Fore wing oblong, the anal angle so retracted that the part of the outer margin from Cu_2 to A is parallel to the base of the costa, *Crocigraha* (10).
Fore wing broadening more toward outer margin, the anal angle less retracted, the margin between the tips of Cu_2 and A, belonging distinctly to the outer margin 19.
19. M_1 of hind wing stalked with R about a fifth way to the margin, wings long and narrow, powdery, hind wing notched opposite cell *Xylomiges*.
 M_1 free, from cell or obscurely stalked 20.

20. Vestiture mainly flattened, feathery; frontal tuft smooth, overhanging; our species mouse-gray *Ulolonche* (Hyssia).
 Vestiture mainly of fine hair, or with divided frontal tuft, larger and heavier 21.
21. With a distinct series of larger spatulate-tipped hairs on the inner side of the patagia, which are usually black and conspicuous, vestiture usually lying flat, basal tuft very slight; transverse posterior line reduced to dots or absent, st. indicated at most by a change of color, wings often acute *Leucania*, group *Cirphis* (8).
 Vestiture almost wholly of hair, loose, with a slight double tuft, basal tuft of abdomen almost obsolete, markings complete. Usually dull brown or silvery gray *Taniocampa* (11).
 Vestiture variable, usually with a fairly even proportion of hair and feathery flattened hair, loose, basal tuft often strong, our species mostly yellowish or reddish *Mamestra* in part (7).
22. Male with rough raised scales or hair on underside of fore wing,
Orthodes (12).
 Both sexes alike with only a little loose long hair on under side of wings *Taniocampa* (*Himella*) (11).
23. Middle tibiae, at least, spinulated 24.
 Tibiæ not spinulated, or at most with one or two spines on the hind tibia, the male often with extremely heavy tibial tufting, which is rare in the spinulated group 63.
24. Hind wing *quadrifid* 25.
 Hind wing *trifid* 41.
25. Eyes small, legs loosely hairy and entire vestiture of rough hair.
Euclidia (13).
 Eyes moderate, nearly or quite as wide as the front 26.
26. Thorax with a strong longitudinal dorsal crest *Celiptera*.
 Thorax with smooth vestiture, or anterior and posterior tufts 27.
27. Fore tibiae spined on front side (the spines easily visible without denuding) (14) 28.
 Fore tibiae unarmed 29.
28. Fore wing lanceolate, hind tarsus very slender, palpi beaklike and extending twice the length of the head *Doryodes*.
 Fore wing with blunt apex, truncate between R_3 and R_4 ; palpi closely upturned to near vertex, tarsi normal *Catocala*, group *Catabapta*.
29. Hind tibiae spined between the spurs (14) 30.
 Hind tibiae unarmed, or with a couple of spines only near the top and often concealed in the vestiture 35.
30. Abdomen with more or less developed basal tufts, usually in the form of raised ridges of loose hair on the three basal segments; hind wing largely black, the ground color often bright red or yellow,
Catocala in part (15).
 Abdomen smoothly scaled, or with vestiture somewhat raised at base, not forming distinct ridges, hind wing broadly marked with black only in *Andrewsia* 31.

31. Upper part of hind tibia with a series of spines 32.
Hind tibia with no spines above upper spurs 34.
32. Palpi with third joint half as long as second, fore wing with subfalcate apex and even outer margin, cell of hind wing a third length of wing 33.
Palpi with third joint a third as long as second, fore wing with blunt apex and more wavy outer margin, cell of hind wing two-fifths length of wing *Drasteria* (16).
33. Male with a fringe of long hair on hind tarsus, hind wing banded, *Remigia*.
Male tarsi normal, hind wing with dark outer third, and pale t. p. line only or wholly plain *Phruris* (17).
34. Thorax tufted behind, third joint of palpi long; fore wing with complex markings, hind wing fuscous *Campometra*.
Thorax wholly smooth, palpus with third joint short, hind wing yellow and fuscous *Catocala* group *Andrewsia*.
Thorax smooth, palpus with third joint short, body more slender, wings pale fuscous and both marked similarly *Spiloloma* (*Strenoloma*).
35. Hind wing black or broadly marked with black, fore wing with complex markings, thorax without massive posterior tuft and elevated patagia, three basal segments of abdomen with raised ridges of rough hair forming more or less distinct tufts on the middle line.. *Catocala* (15).
Hind wing not black, unless the fore wing is also, abdomen with tufts usually either sharply defined or absent 36.
36. Abdomen with strong and strongly unequal tufts, markings usually similar on both wings *Phaocyma* (19).
Abdomen smooth, or with a basal tuft only, sometimes followed by a little loose hair on the next two segments 37.
37. Fore wing with marked subfalcate apex 38.
Fore wing with bluntly rounded apex and sometimes wavy margin .. 40.
38. Male with normal mid-tibia, outer line of fore wing even, and nearly parallel to outer margin *Parallela*.
Outer line angulate, its distinctest (upper) portion perpendicular to costa, male with much swollen mid-tibia; palpi with shorter third joint 39.
39. Third joint of palpus stubby *Agnomonina*.
Third joint of palpus slender *Grammodes* (20).
40. Thorax overlaid with broad spatulate scales *Matigramma*.
Thorax overlaid with fine hair *Poaphila*.
- Trifida with spinulated tibiae.*
41. Fore tibiae with a single terminal claw *Adita*.
Fore tibiae with several claws or spines 42.
Fore tibiae unarmed 59.
42. Front rough with a distinct raised ring, or truncate elliptical projection, *Euxoa* (21).
Front merely rough and prominent, or smooth 43.

43. Ees half as wide as front, front rough 44.
 Eyes with the faceted part about two-thirds as wide as the front,
Heliothis (ononis).
 Eyes about as wide as the front 45.
44. Fore tibia about four times as long as wide, with moderate spines,
Agrotiphila.
 Fore tibia about 3 times as long as wide, with two pairs of heavy
 terminal claws *Melaporphyria* (22).
 Fore tibia about twice as long as wide, with heavy claws.... *Heliophana*.
45. Tongue rudimentary, much shorter than thorax; front rough, but fairly
 flat, fore tibiæ about twice as long as wide, with one terminal claw
 about half as long as itself *Eucoptocnemis*.
 Tongue functional, or with lightly spined fore tibiæ 46.
46. Front rough and granular, dull, strongly rounded out, fore tibia normally
 with heavy claws or spines 47.
 Front shining and rarely projecting more than a third the width of the
 eyes; fore tibiæ slender and usually with light spines 55.
47. Mid-, and hind-metatarsi without an upper row of spinules 48.
 Metatarsi with several subdorsal outer spinules, forming a sparse fourth
 row *Feltia* (21).
48. Fore tibia with two inner and three to five outer claws,
Lygranthacia (23).
 Fore tibia with a single inner terminal claw much longer than the pre-
 ceding spines, the outer not much larger than the preceding ones,
 which are graded in size 49.
 Fore tibia with both inner and outer claws several times as large as the
 immediately preceding spines, or with only these two claws 52.
49. Abdomen with conspicuous basal tuft 50.
 Abdomen with basal dorsal tuft absent or covered by the thoracic
 vestiture 51.
50. Fore wing violet (in the Mississippi valley species),
Dasypouda (24).
 Fore wing red or orange *Rhododipsa*.
51. Vestiture overlaid with hair, wings pink and straw yellow,
Rhodophora (Alaria).
 Vestiture rough, with anterior and posterior tufts, or with imbricate
 spatulate scales, rarely pink and yellow *Schinia* (25).
52. With the two end-claws only, or with one or two spinules; male with
 distorted venation and hyaline streaks on fore wing,
Heliocheilus (26).
 With several spinules on fore tibia, male normal 53.
53. Fore tibia two and a half times as long as wide 54.
 Fore tibia much more slender *Heliothis* (with *Chloridea*).
54. Hind wing contrastingly marked *Eupanychis*.
 Hind wing all dull yellow-brown *Schinia (saturata)*.
55. Palpi upturned to vertex, wings large, broad, with even outer margin,
 tongue weak *Pteroscia*.

- Palpi upturned to middle of front or porrect 56.
56. Vestiture deeply overlaid with plain or forked hair 57.
 Vestiture flattened or mixed 58.
57. Tongue weak, shorter than thorax; wings broad and thin, with even outer margin, resembling *Pteroscia*, metatarsi with three rows of spinules *Choëphora* (28).
 Tongue normal, wings smaller and heavy, metatarsi often with four rows of spinules *Pachnobia* (*Episilia*) (21).
58. Spinulation of fore tibia strong, or if weak and concealed in the vestiture (*baja*), with strongly flattened body *Noctua* (21).
 Spinulation concealed in vestiture, body rather slender and cylindrical, wings broad, with arched costa; largely arctic,
Eurois group *Aplectooides* (21).
59. Abdomen strongly tufted, eyes more or less lashed 60.
 Abdomen untufted 61.
60. Thorax with fine feathery spatulate vestiture, wings normal, our species light gray *Anytus*.
 Vestiture of flattened hair, wings more lanceolate, our species black,
Fishia.
61. Spines of tarsus regular, eyes not lashed *Eurois* (21).
 Eyes distinctly lashed 62.
62. Vestiture mixed, largely spatulate *Apharetra*.
 Vestiture of rough hair, spinules of tarsus distinctly in four well spaced rows, but all four rows are ventral *Ufeus*.
63. *Fore wing without accessory cell* 64.
 Accessory cell present, rarely reduced or stalked, and still more rarely open at tip, leaving R_2 stalked with R_3 and R_4 with R_6 79.
64. M_2 of hind wing wholly absent (legs normal) 65.
 Normal trifida with M_2 very weak, though tubular, and from a third to two fifths way up the cell; legs normal; Sc and R of hind wing fused to middle of cell 67.
 M_2 as strong as most veins, from a quarter way up the cell; front smooth, palpi long, male with legs often modified 69.
65. Front rough and prominent with strongly projecting clypeus, palpi rather short, hardly reaching middle of front when upturned, fore wings rather narrow, R_2 free, from cell, Sc and R of hind wings with long fusion 66.
 Front smooth, palpi upturned beyond vertex, with long third joint, wings broad *Cobubatha* (*Tripudia*) *quadrifera*.
66. Yellow and fuscous, markings simple *Heliocontia* (29).
 Yellow, red and black, markings complex *Spragueia*.
67. Front rough and strongly projecting, the palpi barely extending beyond it,
Tarache group *Tarachidia* (aberrant specimens).
 Front smooth, the palpi if upturned reaching vertex 68.
68. Palpi upturned to vertex, close-scaled, the third joint upturned, front with large smooth imbricate scaling *Menopsimus* (30).

- Palpi porrect, with triangularly scaled second, and porrect concealed third joint, wings broader *Rivula*.
- 69. Palpi rather closely scaled, upturned to vertex or above 70.
- Palpi with first joint very long, third recurved over head and thorax, bearing a pencil of long hair *Palthis* ♂.
- Palpi projecting beak-like about the length of the thorax, with blade-like second and broadly scaled third joint, or rarely (*Renia salusalis* ♂) shorter with a pencil on inner side 73.
- 70. Two radials (R_3 and R_4) stalked, male antennæ pectinate.... *Melanomma*.
- Three or four radials stalked, antennæ various, rarely pectinate 71.
- 71. R_2 free and well separated from the stalk, occasionally stalked with R_1 ,
Hyperstrotia (31).
- R_2 stalked, in *Tetanolita* shortly, with R_{3+4} 72.
- 72. Palpi upturned about to vertex, male with normal antennæ and fore legs, antennæ simple, R_5 free *Ozarba* (32).
- Palpi upturned to twice height of head, recurved; male antennæ with a scale-tuft a third way out, and fore legs with large pencils of hair; R_5 well stalked *Tetanolita*.
- 73. Fore wing cleft at middle of outer margin..... *Gaberasa* ♂.
- Fore wing with a hyaline spot, falcate with angled outer margin,
Dercetis.
- Fore wing opaque, obscurely angled or rounded 74.
- 74. Males,—frenulum simple, fore legs strongly modified 75.
- Females,—frenulum of three bristles, fore legs normal 76.
- 75. Antennæ with a knot and claws near middle *Renia*.
- Antennæ normal *Heterogramma*.
- 76. Fore wing more than twice as long as wide, folded in repose.... *Palthis*.
- Fore wing less than twice as long as wide, normally not folded in repose 77.
- 77. R_2 stalked, outer edge of fore wing only slightly sinuous or bent.. 78.
- R_2 from cell, outer edge of fore wing distinctly angulated *Gaberasa*.
- 78. Normally brown or blackish *Renia*.
- Light grayish luteous, with olivaceous markings *Heterogramma*.
- 79. *Expanse over four inches*; front smooth, with a vertical ridge, very narrow 80.
- Expanse under three inches*, front without a long vertical ridge 81.
- 80. Dark brown, male hind metatarsus with a double fringe of long dense-set bristles, hind wing bent *Erebus*.
- 80. Pale gray and brown, male metatarsus normal; hind wings scalloped,
Thysania.
- 81. *Fore tibia with a claw* at tip, the legs otherwise normal 82.
- Fore tibia unarmed except for the usual epiphysis on the inner side, or else (Deltoids) strongly modified, with large fan-like tufts 90.
- 82. Front with a raised ring 83.
- Front at most rough and prominent 87.
- 83. The ring produced into a point below 84.
- The ring regular and even 85.

84. Apex of fore wing acute *Stiria*.
 Apex of fore wings bluntly rounded *Cirrhophanus*.
85. Fore tibia with two claws *Plagiomimicus*.
 Fore tibia with one claw 86.
86. Bright golden, outer margin of fore wing bent *Basilodes*.
 Dull olivaceous, outer margin more evenly curved *Stibadium*.
87. Small, vestiture of short, spatulate scales, eyes not lashed, three claws on tibia *Derrima*.
 Fairly large, vestiture deep, eyes lashed, one or two claws on tibia ... 88.
88. Vestiture of regularly imbricated spatulate scales, fore tibia with two claws *Lepipolys*.
 Vestiture mixed, feathery, with fine flattened hair dominant 89.
 Vestiture of fine flattened hair and hair, tongue weak, fore tibia with a strong claw and a flattened leaf-like process *Eutotype*.
 Vestiture of simple rough hair *Copipanolis*.
89. Claw very strong, a small leaf-like process beside it, tongue weak, *Psaphida (Dicopis)*.
 Claw slender, no leaf-like process, tongue normal *Oncoenemis*.
90. *Front with a specialized prominence, or conically prominent as a whole* 91.
 Front smooth or rough, and merely rounded out 96.
91. Process long, pyramidal, with concave faces and three or four sharp lateral crests *Nonagria (Archanara)* (33).
 Process with a raised ring at extremity *Eudryas*.
 Process a sharp cone in middle of front, the edges of the front flat.. 92.
 Front conical as a whole, but with the tip of the cone truncate; small scaly moths *Xanthoptera* (34).
 Front conical as a whole 95.
92. Eyes half as wide as front; very hairy *Psychomorpha*.
 Eyes moderate 93.
93. Tongue weak; abdomen with several crests *Achatodes*.
 Tongue rather stronger, abdomen with one crest or none 94.
94. Abdomen with a basal crest, wings normal *Xanthacia* (35).
 Abdomen untufted, wings lanceolate *Senta* (36).
95. Antennæ pectinate in both sexes, eyes naked *Sphida* (37).
 Antennæ simple in both sexes, eyes lashed *Brachycosmia* (38).
96. *Quadrifida with strongly lashed eyes* 97.
 Eyes not lashed in front, or with normal trifid venation (39) 101.
97. Fore wing strongly angulate, especially on M_3 *Scoliopteryx*.
 Fore wing with rounded outer margin, but with a strong lobe and scale-tooth at middle of inner margin *Calpe*.
 Fore wing with at most a scale-tooth at anal angle 98.
98. Palpi projecting obliquely or straight forward about twice the length of the head 99.
 Palpi closely upturned, or moderate in length 100.
99. Lashes loose, well-developed with spatulate tips; fore wing with acute apex, and outer margin curving regularly into inner *Phiprosopus*.

- Lashes short, inconspicuous and simple, anal angle well-marked, and often scale-tufted. HYPENINI 175.
100. Markings in part of raised black scales *Abrostola*.
 Wings smoothly scaled *Plusia* (40).
101. Fore metatarsus with some enlarged spines on outer side, these spines about as long as width of tarsus (trifidæ) 102.
 Fore tarsus normal 104.
102. Eyes naked in front, obscurely lashed behind *Rhodacia* (41).
 Eyes strongly lashed 103.
103. Vestiture of fine hair, male antennæ pectinate *Psectraglæa* (42).
 Vestiture somewhat mixed, male antennæ not pectinate *Harpaglæa* (43).
104. Hind wing twice as wide as the very narrow fore wing, and triangular, *Magusa*.
 Fore wing proportionately broader, and hind wing not triangular 105.
105. Collar hood-like, movable, forming a high crest when turned back and projecting over head when turned forward 106.
 Collar moderate in size and not strikingly movable 107.
106. Eyes lashed strongly, wings lanceolate, vestiture deep and hairy. *Cucullia*.
 Eyes naked, vestiture more scaly *Catabena*.
107. Hind wing translucent white except at margin and veins; wings long; palpi upturned and closely appressed, thorax with mixed vestiture, smooth in front, but with a strong divided or spreading tuft behind 108.
 Hind wing opaque; or otherwise of entirely different structure 109.
108. Abdomen with several tufts, the first large and hood-shaped.. *Prodenia*.
 Abdomen with small basal tuft only *Laphygma*.
109. Fore wing distinctly angulate at M_3 and sometimes strongly so and irregular 110.
 Fore wing with outer margin perfectly even, slightly concave below apex and above anal angle,—these angles both acute, orbicular with slightly raised white scales *Alabama* (44).
 Fore wing with margin often wavy and sometimes slightly bent, but never angled at M_3 or with even outer margin and acute anal angle 117.
110. Eyes heavily lashed *Eucirrhædia*.
 Eyes not distinctly lashed 111.
111. Orbicular marked by a small but distinct raised white tuft *Anomis*.
 Orbicular not marked by a raised white dot 112.
112. A small hyaline dot. Outer margin nearly even, except for the angle at M_3 and falcate apex; palpi beak-like *Dercetis*.
 No hyaline dot 113.
113. Anal angle strongly scale-tufted *Eriopus* (45).
 Anal angle not marked by a scale-tuft 114.

114. Palpi slender and upturned well beyond vertex, wings broad 115.
 Palpi stouter and not reaching vertex, fore wings more than twice as long as wide and irregularly angulate 116.
115. Slender, both wings thin and irregularly angled *Pangrapta*.
 The fore wing only with an angle on M_3 , which is often slight; stouter, *Isogona*.
116. Trifid, female frenulum triple *Brotolomia* (46).
 Quadrifid, female frenulum simple *Eutelia*.
117. With a long lobe and scale-tuft at middle of inner margin *Plusiodonta*.
 With a distinct scale-tuft at anal angle only, our species orange and silver *Eriopus* (45).
 Without a scale-tuft on inner margin 118.
118. One vein of hind wing wholly absent (47) 119.
 Hind wing with M_2 present, though often a mere thickened line, and M_3 free or short-stalked with Cu_1 122.
 M_2 strong, M_3 stalked with Cu_1 more than half-way to margin, *Sarrothripus* (48).
119. Vestiture deep, of narrow strap-shaped scales *Fagitana*.
 Vestiture scaly 120.
120. Palpi short, hardly exceeding the rough and protuberant front. *Spragueia*.
 Palpi upturned to vertex 121.
121. Palpi with curved slender second joint. Fore wing with Cu_2 strongly curved at base, hind wing with Se and R fused to middle of cell, *Characoma* (49).
 Palpi with straight second joint, somewhat blade-like. Fore wing with Cu_2 straight, Se and R of hind wing with short fusion near base, *Galgula*.
122. A pair of loose tufts of bright yellow spatulate scales on mesothorax, and a similar tuft on middle of abdomen *Cerma* (50).
 Mesothorax with low tufts, similar to those behind, or none 123.
123. Eyes less than half as wide as front, nearly buried in hairy lashes, *Sympistis*.
 Eyes more than half as wide as front or not lashed 124.
124. *Abdomen with several dorsal tufts* 125.
 Abdomen with a single basal tuft or none, rarely with a second very slight tuft, or, especially in species with strongly lashed eyes, with loose dorsal hairs on the following segments 152.
125. Abdomen with the crests behind middle larger than those in front and with a massive crest at middle; a massive posterior thoracic crest, *Harrisimemna*.
 Abdomen with dorsal tufts becoming weak or absent on posterior half 126.

126. Anterior tuft of thorax high, truncate at tip, often lying back along the thorax, the true posterior tuft slight or wanting 127.
 Anterior tuft not much higher than posterior, or pyramidal 129.
127. Trifidæ; palpi extending barely to vertex, male antennæ simple in our species 128.
 Venation intermediid; palpi extending far above vertex; male antennæ pectinate *Hypsoropha*.
128. Vestiture very fine and wooly, largely of hair *Papaipema* (51).
 Vestiture mainly of imbricated spatulate scales *Ogdoconta* (52).
129. Vestiture of simple scales; palpi if upturned reaching vertex, if porrect the second joint fairly long, front smooth and fairly flat 130.
 Vestiture of simple scales, front rough and strongly rounded out, hardly exceeded by the palpi 131.
 Vestiture of spatulate scales or deeper 132.
130. Typical trifid a few species of *Hadena*.
 M_2 fairly strong and tubular, M_3 sometimes stalked; *ldcv.* decidedly stronger than *mdcv.* and meeting it at an angle,
Lithacodia (*Eustrotia*) (53).
131. Tuft on one middle abdominal segment very strong *Chamyris*.
 Abdominal tufts moderate, and the two largest, at least, subequal,
Tarache (54).
132. Front strongly rounded out and rough, vestiture of short spatulate scales 133.
 Front smooth, and not strongly projecting unless perfectly smooth and shining 134.
133. Tufts on one middle abdominal segment very strong *Chamyris*.
 Tufts on third and fourth segments of abdomen practically equal, a fan-shaped basal tuft on abdomen *Bryocodia* (55).
134. Eyes decidedly narrower than front 135.
 Eyes as wide as front or wider 136.
135. Vestiture almost scaly, eyes naked, wings stumpy,
Eustrotia ? *inclusens* (56).
 Vestiture of rough hair, eyes strongly lashed, wings long, body stout,
Feralia (57).
136. Palpi with straight blade-like second joint, projecting for more than the length of the head beyond it. HYPENINI 175.
 Palpi shorter or not beak-like 137.
137. Quadrifid; fore wing more than twice as long as wide, female frenulum with at most two bristles, tympanic opening covered by a peculiar flap of scales, base of abdomen with a transverse ridge of scales,
Marasmalus.
- Normal trifid, or if M_2 is low and fairly strong in hind wing, with much broader hind wings; tympanic opening rarely closed by a scale-flap, female frenulum triple 138.
138. Fore wing with marked subfalcate apex and even outer margin (58) 139.
 Fore wing with blunt apex and more or less wavy outer margin 142.

139. Slender, with short spatulate-scaly vestiture, no tufts, made with fovea on disc of fore wing *Amyna* (59).
 Stout, with deep vestiture and a central ridge on thorax 140.
140. Eyes strongly lashed *Jodia* (60).
 Eyes naked, at least in front 141.
141. Palpi upturned beyond vertex, thorax with central ridge sharp and striking *Pyrrhia* (61).
 Palpi somewhat shorter, central ridge of thorax diffuse or rarely (erepta) divided *Apamea*.
142. Fore and hind wings with similar complex markings, resting with wings spread; slender with slender palpi upturned rather beyond vertex; quadrifid *Metalectra* (62).
 Quadrifid, hind wing plain, palpi short *Raphia*.
 Trifid 143.
143. Edge of patagiæ and under side of palpi rough-scaled only, vestiture of deep spatulate scales and hair 144.
 Some loose hair on edge of patagiæ and lower side of second joint of palpus, or vestiture almost scaly 145.
144. Tuft on third segment of abdomen very large *Euplexia*.
 Tufts on third and fourth segments of abdomen subequal,
Trigonophora (63).
145. Palpi with long third, and closely scaled, upturned second joint, the third joint when upturned reaching vertex *Perigea* (64).
 Palpi shorter or with blade-like or clavate second joint 146.
146. Tibiæ with massive tufts *Delta* (65).
 Tibiæ fringed with hair, or evenly scaled 147.
147. Vestiture of short spatulate scales, not decidedly tufted on thorax; palpi upturned to vertex *Bryocodia* (55).
 Vestiture deep, or with strong thoracic tufts 148.
148. Median area contrasting, brown, bounded by the ordinary lines, which meet at inner margin *Conserzula* (66).
 Ordinary lines, if distinct, not meeting at inner margin 149.
149. Thoracic vestiture almost flat dorsally, feathery, not decidedly tufted, markings characteristic *Hyppa* (66).
 Thoracic vestiture well rounded up dorsally, often scaly, almost hairy, or with well-marked tufts when feathery 150.
150. Eyes lashed, front with strong tuft, divided longitudinally and transversely 151.
 Eyes not often lashed, never heavily, front with loose, fine, or rough vestiture *Hadena*, etc. (66).
151. Fore wing with strongly arched costa, about twice as long as wide
Xylotype (67).
 Fore wing with costa nearly straight, and nearly parallel to inner margin,
Xylina.

Abdomen not strongly tufted.

152. Front only half as wide as eyes and rough; basal tuft of abdomen fan-like; vestiture of short spatulate scales, palpi upturned beyond middle of front 153.
 Front projecting half the width of the eyes, broad, rough; palpi beak-like *Balsa*.
 Similar, vestiture scaly, palpi not exceeding the clypeus.. *Tarache* (54).
 Front fairly broad, rarely strongly rounded out (*e. g.*, some *Acronyctas* and *Bellura*); smooth and shining 154.
153. Anterior thoracic crest large and fan-like *Leuconycta* (68).
 Anterior thoracic crest slight *Polygrammate*.
154. Abdomen very stout and broadly flattened; palpi closely scaled and upturned beyond vertex; eyes not lashed.... *Amphipyra* (*Pyrophila*).
 Abdomen rarely strongly flattened and if so with lashed eyes or moderate palpi or both 155.
155. Bright lemon yellow *Xanthia*.
 Ground color green 156.
 Of other colors, often ochre or pale straw-yellow 157.
156. Fore wings twice as long as wide, eyes lashed *Feralia*, group *Momaphana*.
 Fore wing normal, eyes naked *Agriopodes* (69).
157. Vestiture of plain hair, smooth on abdomen and wholly without tufts, fore wing more or less striate, or without distinct markings 158.
 Otherwise, vestiture very rarely of plain hair 159.
158. Tongue very weak, maxillary palpi distinct *Arsilonche*.
 Tongue normal, maxillary palpi concealed by the pilifer in front view, *Ommatostola*.
159. Vestiture of short spatulate scales or simple scales; palpi large, if upturned reaching vertex, eyes very rarely lashed 160.
 Vestiture deep and mixed, palpi usually moderate 180.
160. Mesothorax with well-marked paired tufts between the posterior ends of the patagia, vestiture decidedly spatulate 161.
 Mesothorax usually smoothly, sometimes roughly, scaled but only with divided tufts in a few species with vestiture of normal scales .. 162.
161. Abdomen with a fan-like tuft at base, fore wing not striate, maxillary palpi larger *Acronycta* group *fragilis* (*Microcalia*) (68).
 Abdomen with slight basal tuft or none, fore wing brown, striate; maxillary palpi smaller *Crambodes*.
162. Palpi if upturned barely exceeding vertex, and with moderate, smoothly scaled third joint, or shorter; if porrect, extending about the length of the head 163.
 Palpi if upturned with a long third joint, usually at least half the length of the second, far exceeding the vertex, and when shortest rough-scaled or hairy above; if porrect or oblique much longer, and usually with blade-like third joint. Venation never normal trifold; fore legs of male usually modified 167.

163. Tongue rudimentary, shorter than thorax, palpi massive and somewhat oblique; wings obliquely streaked *Amolita*.
Tongue fairly strong, almost always functional 164.
164. Palpi oblique, triangular, beak-like, vestiture of scales, venation inter-
mediid *Eustrotia ? albidula* and *malaca*.
Palpi closely upturned to vertex 165.
165. Thorax with slight but distinct anterior and posterior tufts; fore wing
blunt, oblong, nearly as wide at basal fourth as at widest point;
trifid *Monodes (Oligia)*.
Thoracic tufts less distinct; fore wing triangular, with marked apex,
silky, dark with contrasting discal spot; trifid *Platysenta*.
Thorax with a slight posterior tuft or none, abdomen wholly untufted;
wings with rounded apex, somewhat variable in form; t.p. line not
straight; vestiture of spatulate scales 166.
Thorax and abdomen untufted, clothed with simple scales, fore wing
broad with marked apex, straight, white-streaked costa, and straight
outer line; venation intermediid with fairly strong M_2 .. *Oruza* (70).
166. Reniform a strongly contrasting white U or V.. *Apamea ? u-album* (71).
Reniform, a small white spot or not white *Caradrina* (72).
167. Palpi upturned to well beyond vertex, the third joint half as long as
the second or more, close-scaled; the second joint also normally
smooth or only a little rough-scaled, either joint distinctly blade-
like only in species where the palpus only moderately exceeds the
vertex. Fore tibia of male only half to three-fifths length of femur
and fitting into a notch in it, without special tufting 168.
Palpi normally blade-like and porrect, if upturned, extending to nearly
twice height of head, and with strongly blade-like second and usually
third joints 169.
168. Fore wing with marked apex and sinuous outer margin.. *Phalaenostola*.
Fore wing rounded *Epizeuxis*.
169. With sharp wings, ground color yellow, our species marked with pink,
Prothymia..
Coloring dull 170.
170. Males (frenulum simple) 171.
Females (frenulum of three bristles) 179.
171. Fore leg strongly modified, usually with a fan-like tuft on femur and one
on tibia, tarsus reduced, except sometimes the first joint, and rising
near the base of the tibia which is hollowed out to receive its
tuft 172.
Fore leg normal. HYPENINI 175.
172. Antennæ simply bipectinate *Philometra*.
Antennæ with a nodosity and tuft at about basal third, unipectinate before
it and bipectinate beyond *Hormisa*.
Antennæ ciliate with a knot and spines near middle 173.
Antennæ simply strongly ciliate 174.
173. Knot before middle of antenna, less conspicuous, palpi upturned with
slender third joint *Zanclognatha*.

- Knot beyond middle of antenna, covered by a strong tuft of hair, the palpi with triangular third joint *Renia*.
174. Palpi with second joint bladelike and third slender *Chytolita*.
Third joint of palpi triangularly scaled, more than half as broad as second *Hypenula*.
175. Fore wing stumpy, with outer line evenly curved and cutting off a lens-shaped paler terminal area, outer margin rounded *Capis*.
Fore wings triangular, with acute apex, palpi shortish, with three shaded, even transverse lines on a gray ground *Salia*.
Fore wing with more or less sinuous inner margin, palpi long and beak-like, often different in the sexes, markings more complex when distinct, often all obscure and fuscous 176.
176. Palpi very broadly scaled above and below, nearly burying the third joint, hind wing deeply notched opposite cell *Hormoschista* (73).
Palpi less broadly scaled, outer margin of hind wing only a little sinuous 177.
177. Fore wing twice as long as wide or less.. *Bomolocha* (with *Lomanaltes*).
Fore wing more than twice as long as wide 178.
178. Inner margin decidedly sinuous, with a scale-tuft at anal angle,
Plathypena.
Inner margin of hind wing practically straight, no scale-tuft.. *Hypena*.
179. Fore wing with a more or less distinct raised black tuft at end of cell (or reniform),—usually minute and wholly black, at lower angle of cell, but in *Capis* with white scales, and in *Hormoschista* larger.
HYPENINI 175.
Fore wing smoothly scaled..... most HERMINIINI (74).
180. Palpi upturned beyond vertex *Taniosea* (75).
Palpi moderate, normally oblique with broad rough second joint 181.
Palpi porrect about the length of the head, body slender, fore and hind wings similarly marked, hind tibiæ of male in our species notched and tufted *Pleonectyptera*.
181. Vestiture fine, with a distinct central ridge the whole length of the thorax; eyes not distinctly lashed, fore wing acute with even outer margin, abdomen with a basal tuft 182.
Without a central ridge on posterior part of thorax (most of the species with an anterior ridge have lashed eyes) 183.
182. Upper part of outer margin perpendicular to costa *Ipimorpha*.
Upper part of outer margin oblique *Pyrrhia*.
183. Trifid (M_2 from a quarter to half way up the cell, weak, M_3 not stalked, etc.) 184.
 M_2 at least half as large as the other veins and tubular, *ldcv.* more erect than lower part of *mdcv.*, M_3 often stalked with Cu_1 195.
184. Eyes distinctly, though often weakly lashed in front, decidedly lashed behind 185.
Eyes not lashed in front, though occasionally with a tuft on the base of

- the antenna, simulating lashes, behind with slight imperfectly differentiated lashes or none 186.
185. Front with fine, short, even, hairy vestiture, vestiture of body smooth, flattened or mixed *Homohadena*.
 From tufted above, the tuft more or less distinctly divided vertically and transversely, the collar with a more or less distinct central ridge, often evanescent when the tegulae are spread apart.. *Xylina*, etc. (76).
 Vestiture all of fine simple hair, without tufts *Homoglaea*.
186. Tongue weak, non-functional 187.
 Tongue normal 188.
187. Antennae of both sexes simple, abdomen with basal tuft, wings lanceolate, *Acronycta*, group *Eulonche*.
 Antennae of male subpectinate, of female simple, abdomen with basal tuft, wings normal *Acronycta*, group *Merolonche*.
 Antennae of both sexes pectinate, abdomen entirely untufted (larva aquatic, a borer) *Bellura*.
188. Abdomen with a dorsal crest at base, sometimes slight 189.
 Abdomen at most with loose hair at base, sometimes smoothly scaled 192.
189. Prothorax with a pyramidal anterior crest, a spreading or divided one posteriorly 190.
 Thorax with spreading anterior and posterior tufts, *Hadena*, groups *Sidemia* and *Luperina*.
 Thorax untufted 191.
190. Outer margin even *Hydracia*.
 Outer margin strongly wavy *Macronoctua*.
191. Palpi upturned about to vertex *Atethmia* (*Bagisara*).
 Palpi upturned about to middle of front *Acronycta* (*Apatela*).
192. Thorax with slight spreading anterior and posterior crests, hind tibia often with a spine between the spurs *Hadena*, group *Luperina*.
 Thorax with a slight anterior crest only 193.
 Wholly untufted 194.
193. Palpi of moth longer, tongue weaker, larvæ probably on marsh plants and perhaps borers *Scota*, group *Arcnostola*.
 Palpi of moth moderate, larvæ external feeders and not associated with marshes *Caradrina*, group *Athetis*.
194. Vestiture of thorax mostly of spatulate scales.. *Atethmia*, group *Elydna*.
 Vestiture of narrow strap-shaped flattened hair *Calymnia*.
 Vestiture of fine simple hair *Cosmia* (*Enargia*).
195. Vestiture of imbricate large scales, with a fan-shaped mass laid flat on the eyeball in front of the antennae in the position of lashes (easily lost); a slight flat raised ridge on the base of the abdomen, and a large flap of broad scales covering the tympanic opening. Female frenulum of two bristles *Pactes* (*Ingura*).
 Female frenulum of three bristles, no scales over eye in the position of lashes, rarely with a scale flap over tympanic opening 196.

196. Palpi projecting forward twice the length of the head, or if somewhat shorter with the third joint half as long as the second 197.
 Palpi sickle-shaped, upturned beyond vertex 168.
 Palpi with third joint shorter, or shorter as a whole 205.
197. Third joint triangularly scaled above 198.
 Third joint only rough above and below 199.
198. Vestiture of fine flattened hair and hair *Antiblemma*.
 Vestiture imbricate, apparently scaly (some *Deltoides*) 169.
199. Stout, hind wing black and white 200.
 Slender, hind wing dull 201
200. Hind wing with black border; a massive frontal tuft extending nearly to tip of palpus *Meliopotis* (77).
 Hind wing with yellow lunule in border, the whole third joint of palpus (which is long) projecting beyond the frontal tuft .. *Cirrhobolina* ♀.
201. Second joint of palpus with a sharp apical tuft above, third joint slender, porrect (possibly upturned in life) and conical, fore and hind wings with similar markings *Anticarsia*.
 Second joint of palpus merely clavate or rough-scaled 202.
202. Fore wing with apex slightly subfalcate, outer margin bent at middle; third joint of palpus slender, smooth and upturned *Hyamia*.
 Fore wing with regularly curved outer margin 203.
203. Palpi with upper side of second joint more broadly scaled than lower, the third joint more or less distinctly turned up 169.
 Palpi with the scaling longer on the under side of the second joint, third joint turned down 204.
204. Palpi with thinner second and blade-like third joint; reniform a dot, *Eucalyptra* (78).
 Palpi with second joint very broadly scaled below, third almost smooth-scaled; reniform a ring *Scolecocampa*.
205. Hind wing black and white or yellow 206.
 Hind wing dull or like fore wing 207.
206. Hind wings white with a yellow lunule in the black border; palpi thick extending well above vertex, with short third joint, *Cirrhobolina* ♂.
 Ground color of hind wings all the same, palpi more oblique, *Syneda* (77).
207. Vestiture of spatulate scales, our species with hind tibiæ of male notched and tufted, palpi oblique, beak-like, exceeding the head by its length, *Pleonectyptera*.
 Vestiture imbricate but deeper, the thorax with high anterior crest, vestiture of front short *Toxocampa*.
- No high anterior thoracic crest, vestiture fine and loose 208.
208. Front with a conical tuft; male with short tufts on legs..... *Phoberia*.
 Front with short hair; male with massive tufts on tibiæ, *Panafoda* (with *Siavana*).

Front somewhat tufted, male tibiæ with very bristly tufting.... *Cissusa*.
 Front somewhat tufted, vestiture coarser, legs with massive tufts. Small
 mouths, expanding about $1\frac{1}{4}$ in. *Trama*.

Notes

1. When $M_2(5)$ of the hind wing is tubular, at least half as strong as the other veins, with a distinct connection to the cubital stem, and not more than a third as far from the cubital as from the radial side of the cell the venation is "*quadrifid*"; if M_2 is a third to half way up the cell, a mere thickening of the membrane, and the discocellulars above and below are about equally strong, it is *trifid*. Those in which the condition may be considered doubtful, especially in which the vein arises about a quarter way up the cell, or M_3 and Cu_1 (3 and 4) are decidedly stalked, are sometimes called *intermediid*, which implies a doubtful case, rather than any definite structure.

2. The primary differences between these three genera are in the larva.

3. Hampson has divided *Anarta*, removing the naked-eyed species to *Sympistis*.

4. *Timais*.—*Euthisanotia* of some authors.

5. A subarctic genus, separated by Hampson from *Scotogramma*, for the *phoca* group.

6. I should limit *Morrisonia* to *vomerina*, the only species showing any structural difference from *Mamestra*.

7. *Mamestra* may be divided into a number of groups, using characters largely given by Hampson, but they hardly seem natural or important enough to be given generic value.

Fore tarsus with several strong claws, front more or less rough.

Front projecting half the width of the eye (*Trichoclea*) *artesta*.

Front flat (*Epia*) *capsularis*.

Fore tarsus normal.

Front projecting half the width of the eye, rough (*Scotogramma*) . . . *trifoliæ*.

Front flat and smooth, shining when denuded.

Male antennæ pectinate.

Pectinations twice as long as the segments without a longer terminal bristle *mucens*.

Pectinations and laminations fused into large triangular processes, without long bristles *lustralis*.

Pectinations about as long as segments, ending in a long bristle,
detracta.

Male antennæ serrate on the sides, and laminate, the laminations very deep in the species with obscure serration.

Thorax with high, divided crests,
discalis, nimbose, purpurissata, etc.

Thorax with low, mostly diffuse crests.
 Wings narrow, hind angle strongly retracted, pale gray,
distincta.

Fore wing half as wide as long, tending to be tufted at anal angle, fuscous brown *meditata.*

Male antennæ simple, ciliate, the laminations making the segments less than twice as wide as long.

Thorax with broad spatulate vestiture with rather strong tufting; abdomen with several tufts.

Anterior tuft usually high, divided.
 Subterminal with a strong W-mark, anal angle strongly retracted, wing three sevenths as wide as long; dull gray or brown *confusa, subjuncta, grandis, atlantica, radix, canadensis.*

Subterminal without a W-mark (typical *Mamestra*),
latex, lubens, adjuncta, etc.

Anterior tuft of thorax low and generally diffuse,
assimilis, goodelli, legitima, rugosa, anguina, pensilis, erecta, renigera, olivacea, lorea, laudabilis, etc.

Thorax clothed mostly with soft hair, with some flattened hair intermixed, appearing woolly; sometimes with slight ridge on collar and anterior crest; abdomen with a massive basal tuft only.

Apex rectangular, vestiture of disc of thorax fine (*Sideridis*) *rosea, congermana, rubefacta.*

Apex acute and outer edge oblique, disc of thorax with contrasting spatulate vestiture (*Ceramica*) *picta.*

All the genera in this group are very close. *Morrisonia* and *Xylomiges* may be separated by slight venational characters, *Barathra* by the fore tibia, *Nephelodes* differs from the hairy *Mamestræ* and even more from the *Tæniocampids* by the strong abdominal tufting; *Tricholita* by the broadly pectinate antennæ in the male and pectinate antennæ in the female. *Leucania* and *Tæniocampa* by the extreme weakness of the abdominal tuft; *picta*, in which this tuft is the weakest, being distinguished by its broad spatulate hair on the disc. Between *Sideridis* and *Cirphis* even this character is evanescent. *Crocigrapha* differs from all our narrow-winged *Mamestræ* in the

broad base of the wings, *Ulolonche* in the smooth overhanging frontal vestiture, combined with strongly flattened vestiture on the thorax.

8. *Leucania* is another polymorphic genus which has been divided by Hampson. It shows the following types of structure.

Collar and thorax in front with a decided central ridge *unipuncta*.
Collar without distinct central ridge, thorax with a slight divided tuft or none.

Body stout, vestiture mixed, of fine flattened hair and hair, abdomen with an obscure basal tuft, nearly buried in long hair. Male mostly with heavily tufted legs, fore wing with outer margin convex,
(*Cirphis*).

Abdomen, all tibiae and first two joints of tarsi very heavily tufted in male *pseudargyrea*.

Abdomen, and fore and middle tibiae only, heavily tufted. *multilinea*.
Abdomen and mid-tibiae rather strongly tufted, the latter with flat, curved outer spur *phragmitidicola*, *commoides*.

Body rather slender, vestiture mostly of hair and very narrow flattened hair, with a single row of spatulate scales on the patagia. Fore wing with apex acute and outer margin concave above Cu_1 , below convex and wavy. Male not specially tufted *linita*.

Body slender, vestiture mostly of blunt flattened hair, the row of black ones not much wider than the others. Wings very silky, apex acute and outer edge rounded; practically untufted (*Borolia*).

flabilis, *rimosa*, *ligata*.

Body stout, vestiture hairy and wholly untufted, collar slightly hooded; front prominent; fore wings acute and triangular (*Meliana* of Hampson, but differing widely from typical *Meliana*).

rubripennis, *albilinea*, *difusa*.

Body fairly stout, vestiture wholly of rather fine hair and wholly untufted, patagia divergent, wings blunter than in the last group (typical *Leucania*) *fallens*.

9. In practically all, if not all Noctuidæ there is an under layer of scales close to the body, but this is not considered in these tables unless it is the superficial layer, at least on the middle of the patagiæ.

10. The character occasionally fails but I know no better. Hampson sinks it to *Sideridis*, but it seems closer to *Taniocampa* (*Monima*).

11. *Taniocampa* does not differ from *Orthodes* in the female. Hampson separates the group which runs out under group 21, as *Monima*, uniting *Himella*, the remaining species of *Taniocampa* and *Orthodes* as *Eriopyga*. *Graphiphora* is an earlier name, of doubt-

ful validity, both it and *Tæniocampa* applying especially to the first group. The Tæniocampæ (with *Monima* and *Himella*) may be grouped as follows:

Body stout, fore wing usually triangular with acute apex; vestiture entirely of hair, fine and woolly, collar with a slight central ridge,

(*Tæniocampa*, *Graphiphora*, *Monima*).

Male antennæ bipectinate *rubescens*.

Male antennæ strongly serrate and fasciculate

Fore wing triangular, with acute apex.....*alia*, *alurina*.

Fore wing very broad at base, with blunt apex *garmani*.

Male antennæ somewhat beaded and fasciculate,

revicta, with var. *subterminata*.

Vestiture never hairy and dense; in group *furfurata* overlaid with rough hair, but then the thorax is small and body slender; collar without central ridge, female ovipositor often exerted (*Eriopyga* in part).

Male antennæ bipectinate, wings stumpy *oviduca*.

Male antennæ serrate and fasciculate *planalis*, *culea*.

Male antennæ ciliate, wings triangular, silky, body slender,

intractata, *contrahens*, group *furfurata*.

12. *Orthodes* forms another group of *Eriopyga*. Each species shows some slight difference in secondary sexual characters.

13. *Euclidia* as usually defined includes two different types of structure, our single eastern species, and the European *E. glyphica* come here.

14. The exact distribution of spines is probably an unimportant character, but the best we have in this series. I have seen individuals of *Grammodes*, for instance, with an odd spine on the hind tibia.

15. *Catocala* is doubtfully distinct from *Phaocyma*, differing really only in coloration. The larva, pupa and habits are also the same. Hampson divides *Catocala* into *Catocala* proper, *Euparthenos*, *Catabapta*, *Mormonia*, *Ephesia*, *Allotria*, *Andreusia*, and *Corisce* on minor differences in palpi, spines, and tufting.

16. *Cænurgia* is the subgenus of *Drasteria* with pectinate male antennæ.

17. Probably *Phrurys*, *Poaphila*, *Agnomonina* and *Parallelia* could be united in a single genus with very little strain, but the larvæ are not well enough known to make it really safe.

18. *Amella* only.

19. Includes *Homoptera* and *Pseudanthracca* which are identical

in structure and plan of markings, and the subgenus *Zale* which has no tufts on the middle femora. *Calycanthata* belongs to *Zale*.

20. Our species placed by Hampson in *Parallelia*.

21. The secondary sexual characters are not really satisfactory for general use, and in this, the Agrotid group, their use would separate very closely related species, so I have gone back to Grote's point of view and combined a number of Smith's genera. It will be noted that *Feltia* and *Rhizagrotis* have been divided; this is largely because their frontal characters seem to have been misinterpreted in the past. The frontal ridge, used by Hampson for *Feltia* is an accident, always absent in some species, and constantly present in none, so far as I know. Some species of *Rhizagrotis* lack the raised ring and in the typical group it is entirely obliterated by the central horn. The principal other changes are the transfer of *geniculata* and *scandens* to *Feltia* on frontal characters, and the change of *fen-nica* from *Noctua* to the ypsilon group on characters of wing form and tarsal spinulation. *Pachnobia* must include *rava*.

The following subordinate groupings may be made:

Euxoa.

Male antennæ broadly pectinate.

Fore tibiæ with very heavy blunt spines *venerabilis*, *gladiaria*.

Fore tibiæ lightly spined typical *Agrotis* (exotic).

Male antennæ heavily serrate and fasciculate.

Fore tibiæ with heavy sharp claws at tip, grading into normal spines above, male genitalia characteristic *Euxoa* s. str.

Fore tibia with one or two heavy usually blunt claws on inner, and about 7 graded ones, on outer side.

Wings narrower, more rectangular.

Hind wings translucent *annexa*, *malefida*.

Hind wings opaque *volubilis*.

Wings broader, more triangular.

Spinules of fore tibia stubby *vetusta*.

Spinules of fore tibia sharp *mimallonis*.

Male antennæ nearly simple (genitalia characteristic) *Chorizagrotis*.

Feltia.

Male antennæ with well-developed pectinations, vestiture rather fine (*Onychagrotis*) *rileyana*.

Male antennæ subpectinate and heavily fasciculate, vestiture almost scaly, *geniculata*.

Male antennæ strongly serrate and fasciculate.

Serration very heavy, vestiture mostly of feathery spatulate scales,
group *subgothica*.

Serration light, vestiture loose and almost hairy.. *scandens, quebecensis*.

Male antennæ ciliate, simple.

Fore wing rectangular, body heavy, habitus *Euxoa*-like *acclivis*.

Fore wing triangular, body light, suggesting *Amolita*, etc. *apicalis*.

Noctua.

Tarsi with a well developed upper row of spines, sparser than others, as in
Feltia, etc.

Wings very narrow, oblong.

Male antennæ pectinate for basal three-fourths.

Apex acute and outer edge rounded *violaris, aurulenta*.

Apex rectangular and outer edge bent in the middle.... *ypsilon*.

Wings broad, triangular, antennæ nearly simple,
(Peridroma) group *astricta*.

Tarsi with at most one or two spines of the upper row.

Palpi clavate.

Both wings more triangular, hind wings somewhat iridescent and
translucent on disc.. (*Peridroma*) groups *saucia, infecta, lubricans*.

Wings less triangular, hind wings opaque in both sexes,
(*Noctua* s. str.).

Vestiture largely spatulate, narrower on disc, the tarsi with three
regular rows of spinules.

Spinules of fore tibia concealed *baja*.

Spinules of fore tibia evident group *c-nigrum*.

Vestiture all alike, fine flattened hair, forked at tip, central row
of spinules broken up *plecta*.

Vestiture on disc of blunt hair, tending to form two longitudinal
ridges, on patagia of fine flattened hair, tarsi usually with
central row of spinules simple group *brunnea*.

Palpi upturned, more closely scaled.

Vestiture of fine flattened hair, 12 spinules on each side of fore tibia,
abdomen of female normal *haruspica*.

Vestiture coarser, six spinules on each side of fore tibia, abdomen of
female with a thickened patch on each side, near tip.. *clandestina*.

Pachnobia.

Male antennæ broadly bipectinate to apex, costa arched, metatarsi with upper
row of spinules *manifesta, monochromatea*.

Male antennæ with pectinations only twice as long as width of joints, with
serrate apex, costa slightly concave; with upper row of spinules,
salicarum, okakensis, littoralis.

Male antennæ serrate and fasciculate, upper spinules wanting, wing form as in the second group.

Palpi clavate with dense vestiture and short third joint hair of vestiture forked *fishii*.

Vestiture of simple hair, bristling on palpus, which has a longish third joint *cinerca*.

Male antennæ simple, ciliate, tarsi with upper row of spinules.

Vestiture of simple hair *wockeii*.

Vestiture of forked hair *rava?*, *juncta*.

Eurois.

Hind metatarsus at least, with a sparse row of upper spines.

Abdomen cylindrical, body strongly tufted (*Eurois*) *prasina*.

Abdomen very strongly flattened, vestiture smooth.

(*Triphana*) *fimbria*, exotic.

Hind metatarsus usually with the three rows of spines on the under side only, rarely (*e. g.*, *stellaris*) with one or two subdorsal spines.

Fore tibiæ slightly spined (*Aplectooides*, *Platagrotis*).

Vestiture of inner half of patagia much coarser, fore wing more triangular, approaching typical *Eurois* *pressa*.

Vestiture even, smooth, largely hairy, wings rectangular, with normally arched costa *imperita*, *condita*, *speciosa*.

Fore tibiæ unarmed.

Male antennæ bipectinate (*Semiophora*, *Matuta*).

Antennæ broadly pectinate, front concolorous.

Vestiture mostly hairy, thorax very stout, palpi beak-like, fore wing with rectangular apex and outer edge straight to Cu_1 *tenebrifera*.

Vestiture mixed group *climata*.

Antennæ of male narrowly pectinated, front black ... *opacifrons*.

Male antennæ simple.

Slender, with strongly arched costa and marked apex of fore wings; antennæ slightly serrate.

Female wings reduced (*Anomogyna*) *latabilis*.

Female wings normal *sincera*.

Abdomen more or less, usually strongly, flattened, with lateral fringes of hair; antennæ usually wholly simple, fore wing with straight costa and usually blunt apex.

Vestiture of second joint of palpus loose.

Wings short, abdomen little flattened, hind wings yellow, *gilvipennis*.

Fore wings long, abdomen strongly flattened,

brunneicollis, *rufipectus*.

Second joint of palpi clavate, third joint often porrect and beak-like.

- Abdomen extremely flattened *Rhynchagrotis*.
Abdomen moderately flattened.
Fore wing more acute at apex,
(*Adelphagrotis*) *stellaris*, Western.
Fore wing with blunt apex *Eueretagrotis*.

The last three groups are hardly distinct. Typical *Rhizagrotis* (*cloanthoides*, *albalis*, etc.) is purely western and differs from *acclivis*, etc., in having no upper spinules on the tibiæ, and a decidedly conical frontal prominence.

22. Smith evidently had a defective specimen as he saw but one pair of claws.

23. Hampson separates this from *Schinia*, at one time each was still further divided.

24. *Dasyspondæa* had perhaps better be united with *Rhododipsa*. They are similar in structure, but a little different in range of color and the markings of the hind wing; a single species of each has been reported from Wisconsin.

25. *Rhodophora* and *Schinia* intergrade, the pink species of the latter (*regia*, *sanguinea*, and *gloriosa*) might be transferred to the former or the genera united. *S. saturata* has only two strong claws, differing hardly at all from *Eupanychis*.

26. *Heliocheilus* is distinct enough from *Heliothis* but probably a synonym of the oriental genus *Raghuva*.

27. Hampson transfers the name *Heliothis* to certain small-eyed western and exotic forms, using *Chloridea* for all our species. *Ononis* connects the two types.

28. Hampson unites this genus with the next.

29. *Fruva*.

30. *Caducus* Dyar, our smallest Noctuid.

31. The only species in our area are *atheria* and *secta*. The venation varies widely, there often being a large accessory cell. Smith mistook specimens of *secta*, for *aria*.

32. I should place in *Ozarba*, *nigellus*, *humerata* and *puncticosta*. It seems to be a reduced *Episcuxis*, as Strecker considered it, rather than Erastrine.

33. Typical *Nonagria*, with a simpler frontal prominence, does not occur in our area.

34. *Nigrofimbria* is our only species, structurally *semiflava* is a typical *Tarache*.

35. Also sometimes known as *Gortyna* or *Ochria*. *Buffaloënsis* (= *latia*) is our only species.

36. The typical group does not occur in this country. I have used the name here to include *defecta*, *orphnina*, *rufostriga*, *panatela*, and *inquinata*, with its probable varieties *variana* and *orientalis*. These have been variously distributed, but all are strigose marsh species, with a good deal in common. The first two will run out here, agreeing in structure with Hampson's characterization of *Canobia* rather than *Arenostola*, where he places them with *S. inquinata*. He makes *rufostriga*, type of *Hypocana*. Smith puts *defecta* in *Scota*, *inquinata* in *Tapinostola* and *panatela* in *Erastria*. *Rufostriga* has been considered a *Caradrina*, and a *Leucania*.

37. Hardly worth separating from *Bellura*.

38. *Anchocclis*.

39. Because of their intermediate position the Hypenini have been run out on both sides. *Hormoschista*, by the way, is very near *Hypcna*.

40. Dyar divides the genus as follows:

Palpi with a loose tuft on under side of tip of second joint, very long, with third joint two-thirds as long as second, wings narrow *Eosphoropteryx*.
Palpi merely rough-scaled below, shorter or without tuft on second joint, wings broader.

Palpi exceeding vertex most of the length of the long third joint.

Wings subfalcate *Panchrysis*.

Wings rounded or with rectangular apex *Polychrysis*.

Palpi with only tip of third joint beyond vertex, often clavate.

Eyes much narrower than front, hind wing normally yellow,

Syngrapha.

Eyes usually the width of the front, hind wings rarely yellow.

Fore wing falcate, bent at middle and concave on upper half of outer margin *Plusia*.

Fore wing with apex merely rectangular, and even, evenly curved outer margin, caterpillars internal feeders *Euchalcia*.

Fore wing with extreme apex rectangular or rounded, outer margin crenulate *Autographa*.

41. *Aurantiago*.

42. *Carnosa*.

43. *Scricca* and *pastillicans* with its pink variety *tremula*. The two former can be distinguished, I believe, by the fine pale line on

the inner margin of the fore wing, which is cream in *sericea* and pink in *pastillicans*. The pale lines on the veins sometimes fail, though strong in a large majority of *sericea*, and rare in *pastillicans*. The genitalia are strikingly different.

44. *Alctia*.

45. Includes *Calloplistria*, *Euherrichia* and *Methorasa*, with a great variety of exotic forms. Group *Calloplistria* has angulate wings and a knot in the male antennæ; *Euherrichia* has angulate, and *Methorasa* rounded, fore wings, with normal male antennæ.

46. *Mesolomia* of Smith, *Trigonophora* of Hampson.

47. In the case of *Fagitana*, *Spragucia*, etc., related species indicate that $M_2(5)$ has disappeared *in situ*, being sometimes indicated by a slight thickening of the membrane and crowding of the scales, only visible in stained and bleached specimens. In *Characoma* it is probably M_3 and Cu_1 that have fused completely.

48. *Nycteola revayana* only.

49. *Characoma nilotica*, according to Dyar, is an older name for his *Nycteola proteölla*. It is a wide-spread subtropical species.

50. The western species referred to *Cerma* have nothing to do with it, but belong more nearly to *Bryocodia*: so far as I know *C. cora* is unique, having perhaps its closest relative in the even odder *Harrisimemna trisignata*.

51. Also known as *Gortyna* and *Hydræcia*. *Cerina* seems not to belong here, but is in every way, even to coloring, a *Xanthia*, closely related to some European species.

52. *Telcsilla* of some lists, but quite different from the European *T. amethystina*.

53. Also known as *Erastria*, and including *Argillophora*, which does not seem to differ in structure. We have no really typical *Eustrotias*, but most of our species are congeneric with *L. bellicula*. The others are provided for elsewhere in the tables.

54. *Acontia*. *T. terminimacula* has a fovea and therefore belongs to Hampson's first group. Group *Tarachidia* differs in the trifid venation of the hind wing.

55. Separated from *Bryophila* by Hampson.

56. This is almost deserving of a separate genus. Its relationships seem more with *Fagitana* than *Eustrotia*, but I have no material for dissection.

57. The typical group, including *jocosa* and *major*, runs out here. *Momaphana comstocki* with somewhat larger eyes and stronger tongue, hardly deserves a separate genus.

58. Here we run into the *Hadena* and *Orthosia* groups. The genera are largely ill-defined on their boundaries, though well marked in their typical forms. Such as are particularly close to *Hadena* have been reviewed in this JOURNAL, Vol. 21, p. 179. At this point there will be difficulty with *Apamea crepta*, which has the apex of the fore wing rounded, but a perfectly even outer margin, and the habitus of *Apamea*, and with *A. velata*, whose apex is subfalcate, but the outer margin distinctly wavy.

59. Including *Pteratholix*, in which the fovea is strongly developed, but not *teratophora*, which is, I believe, a *Bryocodia*.

60. Several other Orthosiids may possibly run out here, the genera in this group being ill-defined. I believe this will prove congeneric with the European *Hoporina croceago*, both having the same wing-form, tufts, and flattened abdomen.

61. *P. cxxprimcus* comes here, *P. umbra* has but a single abdominal tuft.

62. The type of *Metalectra*, *M. præcisalis*, is extremely close to our *discalis*. Typical *Homopyralis (contracta)* differs in having no special tufting on the legs, and may be kept as a subgenus.

63. *Chutapha* of Hampson, who transfers the name *Trigonophora* to the iris group.

64. *P. xanthioides* has normal palpi, and becomes so far as I can see indistinguishable from *Hadena*. Still it looks like a *Perigea*.

65. Differs from *Actinotia* (of Europe), with which it has been united, in the unarmed tibiæ. Too close to *Hadena*.

66. I do not believe these genera are distinct.

67. A genus formed by Hampson for *capax*. *Polia* will run out either here or with *Hadena*, and some species seem closely related to each. Group *Eurotype* differs from *Xylotype* in the pectinate antennæ, and the difference from *Hadena* is perhaps in the tuft of hair-scales on the basal joint of the antennæ, simulating lashes.

68. Grote fixed the type of *Microcalia* as *fragilis*. This is an *Acronycta*, typical of the smaller scaler group, so Hampson provides the new name *Leuconycta* for *diphteroides*.

69. *Diptera* and *Moma* of our lists, but these belong to the *Pantheinæ*, while *Agriopodes* is hardly distinct from *Acronycta*.

70. *Albocostaliata*, originally described as a geometer, referred here on Dyar's authority. The type of *Orusa* is a very similar South American species.

71. Also sometimes placed in *Fagitana*. It seems out of place in either.

72. Including *Anorthodes*, *Proxenus*, etc., *Athetis* of Hampson.

73. I believe this is a true Deltoid, near *Hypena*.

74. The genera of this group are separated almost entirely on male characters. *Hypenula* can be distinguished from most of the others by its blackish coloration, and long rough palpi with triangular end-joint. *Chytolita* is light clay-color with sinuous outer line, but a couple of *Zanclognatha* are similar. *Zanclognatha* can generally be distinguished by its more distinctly curved palpi. *Hormisa* is composed of three dissimilar species, one marked with straight transverse lines, one with longitudinal bars, and the other similar to *Chytolita*. *Renia* and *Philometra* also come out here.

75. *Parastichtis* of Smith but not of Hampson.

76. Here will come the species on our lists as *Xylina*, *Calocampa*, *Scopelosoma*, *Lithomia*, *Litholomia*, *Brachycosmia*, (*Anchocelis*), *Glæa*, *Epiglæa*, and those *Orthosias* placed by Hampson in *Amathes*. The characters for individual genera as given by Lederer, Smith and Hampson, are largely based on slight differences in the tufting, which often fail in specimens with the thoracic parts in a slightly different position, or the abdominal tufting, which is particularly evanescent in the group, and varies within the genera as now understood; and on the markings, which are differently interpreted in Europe and America. The European species nearest to *Papaipema cerina* for instance, is there considered a *Xanthia*; those corresponding to *Orthosia* (*Amathes*) *bicolorago* also as *Xanthia*, while the type represented by our *Xanthia puta* and *pulchella*, is the European *Orthosia*. There is quite a little variation in wing-form and markings in the two overlapping genera *Xylina* (*Grapholitha*) and *Episilia* (*Scopelosoma* plus *Glæa* in part) sufficient to cover the other nominal genera. Not enough of the larvæ are known to help much, but those of *Scopelosoma* are of two widely divergent types, one agreeing with *Jodia* and *Amathes* in a general way, the other unique.

77. *Limbolaris* is, so far as I can see, a typical *Syneda*, and was placed there until Smith's catalogue was published.

78. Often misspelled "*Eucalyptera*."

Postscript. The thirteenth volume of Hampson's Catalogue of the Lepidoptera Phalaenæ has just appeared. *Euclidia* is divided, our species going into *Gonospelecia* Hübn., if the Tentamen be ignored. *Drasteria*, as a result of the first species rule disappears, to be replaced by *Cænurgia* Grote, *Mocis* is used in place of *Kemigia*. For another reason *Argyrostromis* Hübn. is used in place of *Agnomonis* Hübn., and is made to include *Poaphila* (excepting a few transferred to *Phrurys*). *Zalc* replaces *Phæocynia*, following the law of priority. In the Pantheids *Diphthera* is used in place of *Panthea* and *Colocasia* in place of *Demas*. *Plusia* is quite differently divided, and the names differently applied. A few species of *Plusia* have spined tibiæ, and will run out in the table to alternative 25, where they may be separated by their strongly lashed eyes. Quite a good many have a few spines on the hind tibia, and *Autographa* and *Syngrapha* (interchanged in significance), are used for them, reviving *Phytometra* (a name formerly used for a variety of Noctuids and Geometers) for the more normal *Plusia* group, including *Plusia*, *Euchalcia*, *Panchrysis* and part of *Autographa* of Dyar's list.

EXPLANATION OF PLATE I.

Fig. 1. Venation of *Noctua c-nigrum*, typical of the *Trifida*, the veins numbered according to the Comstock-Needham and German systems.

F.h. Frenulum-hook.

acc.c. Accessory cell (cell 1st R_3).

udcv. Upper discocellular vein.

mdcv. Middle discocellular vein.

ldcv. Lower discocellular vein.

Subm. sp. Submedian space (cell Cu + 1st A).

cell. Discal cell (cell R + 1st M_2 + M).

C. Costal vein.

Sc. Subcostal vein.

R. Radial vein, with its branches R_1 , etc.

M_1 , M_2 , M_3 . The branches of the median vein, whose base is lost.

Cu. Cubital vein; Cu_1 , Cu_2 its branches.

2d A, 3d A. The anal veins. 1st A lost in both wings.

fren. Frenulum.

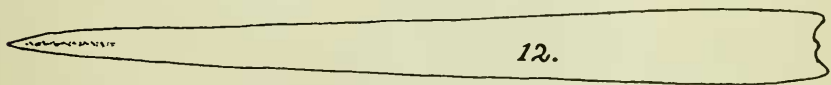
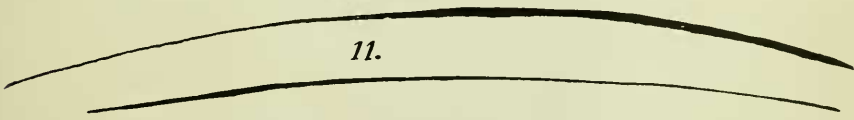
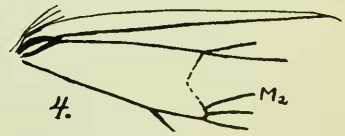
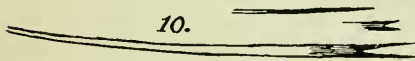
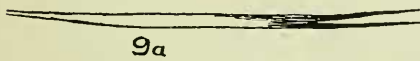
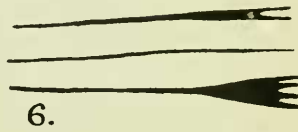
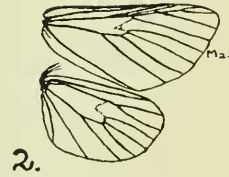
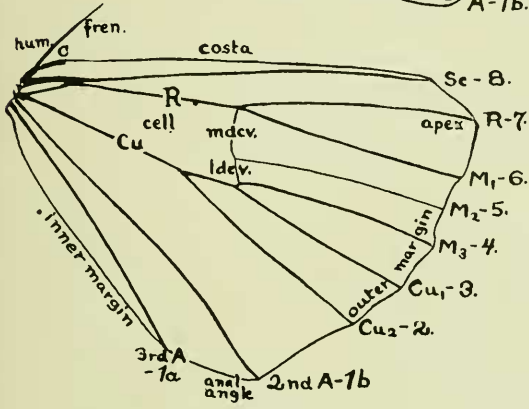
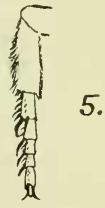
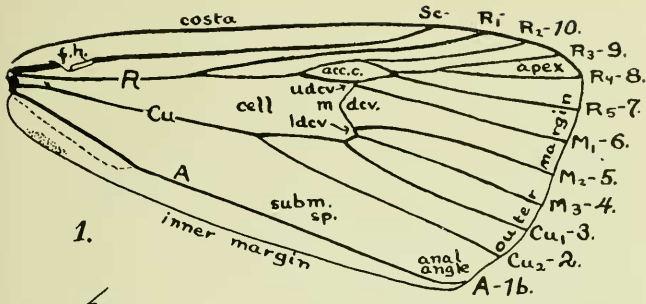
hum. Humeral angle.

Fig. 2. Venation of *Panthea*, a fairly normal quadrifid.

Fig. 3. Characteristic intermediid venation,—costa and cell of hind wing.

Fig. 4. Typical quadrifid venation,—costa and cell of hind wing.

Fig. 5. A heavily spinulated tarsus,—*Epia capsularis*.



Northeastern Noctuidæ